

Patent Claims

1. Process for solids suspension and dosing of a granular, grain or powder type of solid material in a high-pressure process, using essentially a supercritical fluid as process fluid, the said process being a suspension step which is part of the high-pressure process and consisting of a suspension vessel and a device for circulation of the liquid as well as for feed and discharge operations,
 - solid material and a fluid being fed to the suspension vessel and the said fluid being a liquefied gas,
 - the solid material becoming suspended in the fluid with the aid of the device for agitating the liquid, thus keeping the solids in suspension, characterised in that
 - the pressure applied in the suspension step is < 90% of the critical pressure of the process fluid and in an advantageous variant < 60 bars, a gaseous phase blanketing the liquid phase in the suspension vessel,
 - and in a last step the suspension is conveyed by pump into the high-pressure process.
2. Process according to Claim 1,
characterised in that the pressure in the suspension vessel is essentially stabilised during the feed cycle to the high-pressure process by admitting solids free gas.
3. Process according to one of the preceding Claims 1 or 2,
characterized in that the device for circulation of the fluid in the vessel is an agitator mounted in the vessel.
4. Process according to one of the preceding Claims 1 or 2,
characterized in that the device for agitating the liquid is a pump connected to the suspension vessel via an intake and delivery line and part of the suspension inventory being constantly circulated in a cycle.
5. Process according to one of the preceding Claims 1 to 4,
characterised in that the fluid in the suspension vessel is essentially identical chemically with the high-pressure process fluid.

6. Process according to one of the preceding Claims 1 to 5,
characterised in that further non-solid feedstock is added to the fluid, such as H₂O or cyclic and acyclic short-chain hydrocarbons or short-chain alcohols, aldehydes or ketones as well as mixtures thereof.
7. Process according to one of the preceding Claims 1 to 6,
characterised in that the pressure applied in the suspension tank during the feed cycle to the high pressure process is maintained constant by adding gas in the gaseous state.
8. Process according to one of the preceding Claims 1 to 7,
characterised in that the suspension is permanently stabilised during the suspension feed cycle to the high-pressure process by means of the liquid agitating device.
9. Process according to one of the preceding Claims 1 to 8,
characterised in that the input solid material is a fluid to be dissolved in the high-pressure process, such as colour pigments, bonding agents, bleaching agents, aromatic fluids, scent extracts or mixtures thereof.
10. Process according to one of the preceding Claims 1 to 9,
characterised in that the suspension feed operation to the high-pressure process is run in a continuous mode during the vessel discharge cycle, the volume feed rate being either even or variable so that the concentration in the suspension vessel is essentially kept constant.
11. Process according to one of the preceding claims 1 to 10,
characterised in that the suspension stream is adjusted at the admixture to the high-pressure process in such a manner that the ratio of the volumetric streams of suspension and high-pressure fluid is 1 : 50 and in the ideal version ≤ 1 : 100.